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EXAMINER
EPPERSON, JON D

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/846,058	BASS ET AL.	
	Examiner	Art Unit	
	Jon D Epperson	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 27-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *29,31,35 and 39-44* is/are allowed.

6)☒ Claim(s) *1-9,27,28,30,32-38,45 and 46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination (RCE)

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection (e.g., see 11/16/04 Response). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/8/04 has been entered. Claims 1-23 and 27-38 were pending. Claims 1, 4, 27, 28; 29, 35 and 37 were amended. New claims 39-46 were added and claims 10-26 have been canceled. Therefore, claims 1-9 and 27-46 are currently pending. An action on the merit follows.

Those sections of Title 35, US code, not included in the instant action can be found in previous office actions.

Withdrawn Objections/Rejections

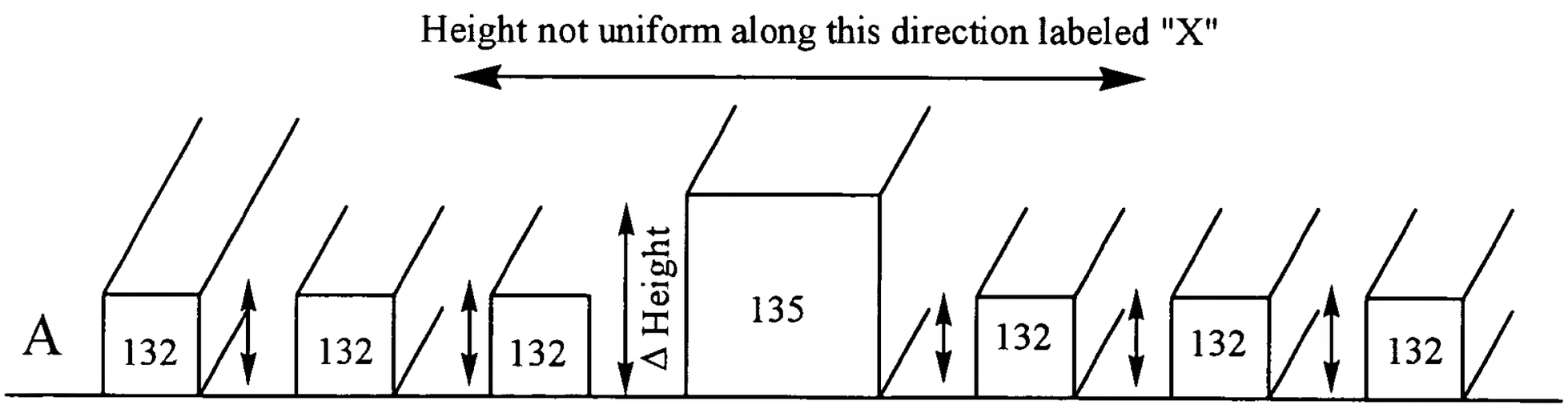
2. The objections to claims 35 and 36 are withdrawn in view of Applicants' amendments and/or arguments. The rejection under 35 U.S.C. 112, second paragraph denoted B is withdrawn in view of Applicants' amendments and/or arguments. The Cattell rejection under 35 U.S.C. § 103(a) is withdrawn in view of Applicants' arguments and/or submission of assignment data in accordance with 35 U.S.C. § 103(c). All other rejections are maintained and the arguments are addressed below.

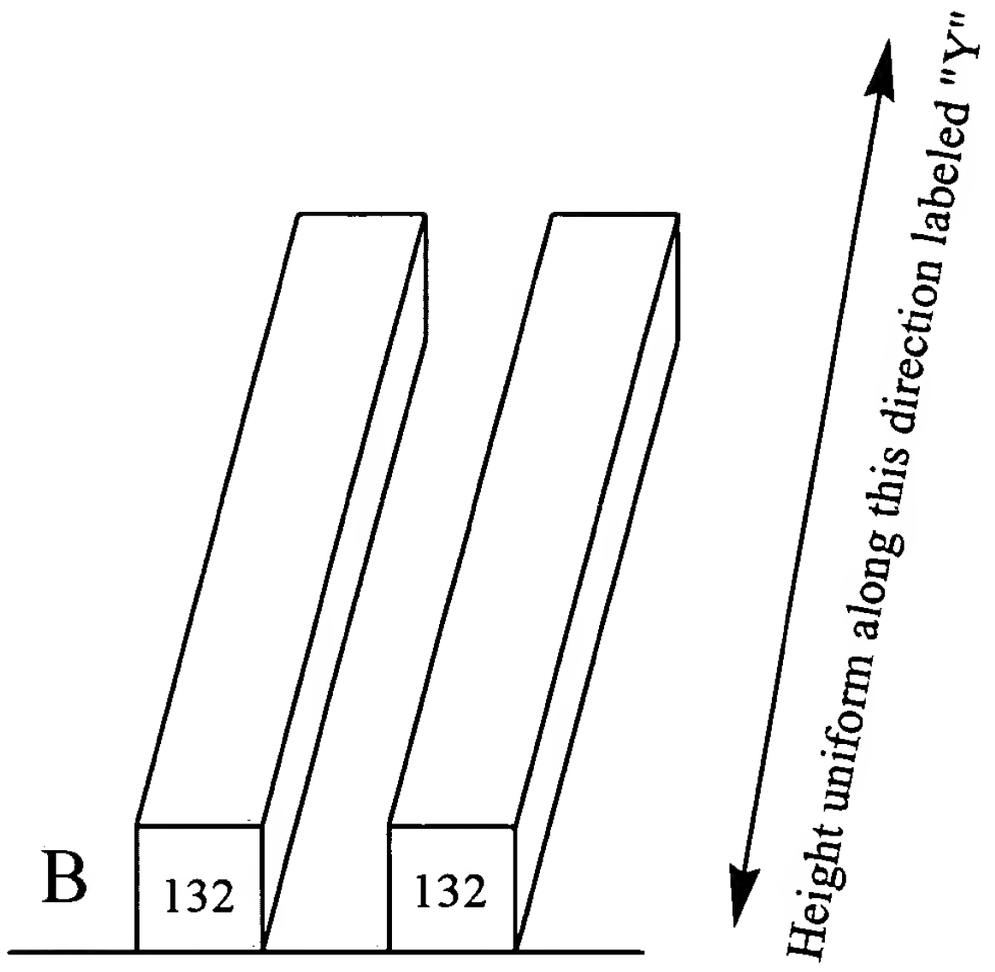
Outstanding Objections and/or Rejections

Claims Rejections - 35 U.S.C. 102

3. Claims 1-9, 27, 30, 32-34, 36 and 46 are rejected under 35 U.S.C. 102(e) as being anticipated by Indermuhle et al. (US Patent Application Publication 2001/0036674 A1) (Filed on **February 23, 2001**).

For ***claims 1, 8-9, 27***, Indermuhle et al. (see entire document) disclose methods for making and using "pillar" biochips including the use of "elongated" pillars (see Indermuhle et al., abstract; see also figures 24-25), which anticipates the claimed invention. For example, Indermuhle et al. disclose **(a)** comparing the height uniformity of a first direction and a second direction across a substrate to identify a first direction having higher height uniformity than a second direction, wherein said first and second directions are planar to said substrate (e.g., see Indermuhle et al., figure 24). For example, the top of element 132 in figure 24 displays a rectangle wherein a direction that is parallel to the longer edge of the rectangle (i.e., the direction labeled "Y" in figure "B" below) has a higher height uniformity than a direction that is parallel to the shorter edge of the rectangle (i.e., the direction labeled "X" in figure "A" below).





Here, both directions (i.e., X and Y) are in the plane of the substrate, but the "Y" direction (see figure B above) has higher height uniformity because the top of the rectangular pillar extends almost continuously across the entire length of the substrate without any variation in the height. In contrast, the "X" direction (see figure A above) extends across many pillars (e.g., elements 132 and 135; see also figure 24 wherein "9" 132 pillars are shown), spaces that separate the pillars (e.g., element 134 in figure 24), and many channel defining walls (e.g., "2" 135 pillars are shown in figure 24). Thus, the "height" is less uniform proceeding along the "X" direction than the "Y" direction (compare figures A and B above) because the height changes from pillar (i.e., element 132) to space between the pillars (i.e., element 134 in figure 24) to channel defining wall elements (i.e., element 135) (see also figure A above wherein vertical "arrows" depict all the changes in height as one proceeds along the "X" direction). In addition, the X and Y directions have been "visually compared" because figure 24 shows the "alignment" of the

top piece (e.g., elements 130 and 133) parallel to the elongated axis of the pillars (e.g., elements 132 and 135). That is the top piece only "fits" in "one direction" and thus the heights must be "visually compared" in order to make this fit and/or alignment as explicitly shown in figure 24 or, in the alternative, the "comparison" was inherently made at the "fitting" and/or "design" stages (i.e., when the plates were put together OR when the bottom plate was individually fabricated). That is, the plates were designed to "fit together", which takes into account a comparison of the heights along the "X" and "Y" directions to insure that the top plate fits into the bottom plate both when the plates were made and when the plates are actually fitted together. If this were not the case, then the plates wouldn't fit together and sample would be placed in the "wells" between the pillars as a result of misalignment. "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The Office does not have the facilities to make such a comparison and the burden is on the applicants to establish the difference. See *In re Best,* 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *Ex parte Gray*, 10 USPQ 2d 1922 1923 (PTO Bd. Pat. App. & Int.).

In addition, Indermuhle et al. disclose **(b)** placing different chemical moieties on the substrate so as to provide features thereon along rows more closely aligned with the first direction than the second direction (e.g., see Indermuhle et al., figure 24, wherein element 133 is used to "dispense" chemical on the top of the elongated pillars that are parallel i.e., closely aligned to the first direction; see also page 2, column 2, paragraph 44

which discloses numerous chemical moieties that can be deposited on the pillar e.g., antibody/antigen, enzyme/substrate, etc.).

Finally, Indermuhle et al. disclose the fabrication of an array of multiple features of different chemical moieties on the substrate surface (e.g., see Indermuhle et al., figure 24 disclosing the array of pillars on the surface wherein various chemicals are spotted on said surface; see also page 2, column 2, paragraph 44; see also figures 2-4; see also page 3, column 2, paragraph 55). Also note that the "first" and "second" directions are perpendicular to the edges of the substrate (i.e., they are perpendicular to each other).

For ***claim 2***, Indermuhle et al. disclose biopolymers in including proteins, DNA and carbohydrates (e.g., see Indermuhle et al., page 2, column 2, paragraph 44).

For ***claim 3***, Indermuhle et al. disclose measuring the thickness of the substrate at different positions (e.g., see Indermuhle et al., figure 24 wherein the thickness of the substrate is measured at each element 132 in order to fit this protrusion within the dispenser at each element 133).

For ***claims 4, 32, 33 and 46***, Indermuhle et al. disclose receiving a substrate from a remote location (e.g., see Indermuhle et al., figure 24, elements 130 and 133 wherein dispenser 133 is the remote location). Indermuhle et al. further disclose receiving from a remote location in association with the substrate, an identification of a first direction across the substrate surface along which the substrate surface has a higher height uniformity than along a second direction across the substrate, wherein said first and second directions are planar to said substrate (e.g., see claim 1 above; see also Indermuhle et al., figure 24 wherein element 132 fits into or is "identified" or

"recognized" by element 133 at each position on the substrate and this recognition is based on "shape"). In addition, Indermuhle et al. disclose placing chemical moieties on the substrate so as to provide features thereon along rows more closely aligned with the first direction than the second direction (e.g., see Indermuhle et al., figure 24, wherein element 133 is used to "dispense" chemical on the top of the elongated pillars that are parallel i.e., closely aligned to the first direction; see also page 2, column 2, paragraph 44 which discloses numerous chemical moieties that can be deposited on the pillar e.g., antibody/antigen, enzyme/substrate, etc.). Finally, Indermuhle et al. disclose the fabrication of an array of multiple features of different chemical moieties on the substrate surface (e.g., see Indermuhle et al., figure 24 disclosing the array of pillars on the surface wherein various chemicals are spotted on said surface; see also page 2, column 2, paragraph 44; see also figures 2-4; see also page 3, column 2, paragraph 55).

For ***claims 5, 30 and 36***, Indermuhle et al. also disclose additionally associating with the array an identification as to the direction of the rows and forwarding the array and associated identification to a remote location (e.g., see figure 24, wherein the identification of the direction of the rows is forwarded to the remote location of the dispenser chip so that the two chips can be properly aligned).

For ***claims 6-7, and 34***, Indermuhle et al. disclose "aligning" the housing for the substrate, which may include a wide variety of different dispensers known in the industry (e.g., see page 8, column 2, paragraphs 94-97). Indermuhle et al. further disclose the use of alignment marks or pins (e.g., see page 9, column 2, paragraph 104) and/or the identification of particular shapes like the "rectangular" pins (e.g., see figure 24). Other

identifiers are also disclosed including various types of markings (e.g., see page 9, paragraph 105).

Response

4. Applicant's arguments directed to the above 35 U.S.C. § 102 rejection were fully considered (and are incorporated in their entirety herein by reference) but were not deemed persuasive for the following reasons. Please note: that the above rejection has been modified from it original version to more clearly address applicants' newly amended and/or added claims and/or arguments.

[1] Applicants argue, "Indermuhle's different chemical moieties are actually placed in a row perpendicular to the direction having higher height uniformity. Accordingly, Indermuhle fails to disclose any method in which different chemical moieties are placed in a row in a direction having higher height uniformity" (e.g., see 9/8/04 Response, pages 8-9, especially figure on page 9).

[2] Applicants argue that the "mere possibility that [a] limitation is taught in the art" is not sufficient to merit a rejection based on inherency in accordance with MPEP § 2112. To this end Applicants state, "there are multitudes of different ways (other than by comparing height uniformities) that Indermuhle's samples may be accurately placed on the tops of the elongated pillars. For example, Indermuhle's samples may be accurately placed on the tops of the elongated pillars 132 using alignment member ... These exemplary methods may be performed in the absence of any comparison of substrate height uniformities ... [thus] comparing height uniformities in not inherent in the method (e.g., see 9/8/04 Response, pages 9-10).

This is not found persuasive for the following reasons:

[1] In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "different chemical moieties are placed in a row in a direction having higher height uniformity") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Here, claim 1, for example, only recites that "features" (not "different chemical moieties") be more closely aligned with the first direction than the second direction. The word "feature" can broadly be defined as, "A prominent aspect, quality, or characteristic" (e.g., see Soukhanov, et al. Eds. Webster's II New Riverside University Dictionary. Boston: The Riverside Publishing Company 1988, page 469). Thus, "different chemical moieties" need not be placed more closely aligned with the first direction as Applicants' contend. Rather, any feature of the sample need only be aligned (e.g., the different chemical moieties are all placed on top of the pillars in "liquid" form and thus the "liquid" nature of the samples constitute a "feature"). For example, if the samples are placed onto the pillars in a "liquid" form then clearly the "liquid feature" is more closely aligned with the "Y" direction (see figure 1B above) because the liquid is not placed in the "wells" between the pillars or on top of the channel defining walls.

[2] In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the use of height measurements to accurately place the samples on top of the pillars) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26

USPQ2d 1057 (Fed. Cir. 1993). Here, nothing in Applicants' claims states that this height comparison must be "used" for alignment and/or "dispensing purposes. To the contrary, the claim merely states that a comparison of height must be made without specifying what this comparison is being used for. In the present case, a clear comparison of heights has been shown (e.g., see figure 24) because the sample is only placed along the "Y" axis (i.e., on the tops of the pillars as opposed to in the "wells" between the pillars) during the dispensing process and furthermore the bottom plate was "designed" to fit into the top plate (e.g., see figure 24) and, as a result, a comparison of the "X" and "Y" directions was also made at this stage (i.e., before any dispensing or alignment occurs). Therefore, Applicants' arguments are moot with regard to inherency because the reference explicitly teaches the comparison (e.g., the samples are not being placed into the "wells" between the pillars and the top plate "fits" into the bottom plate).

However, even if *assuming arguendo* that such an inherency argument must be relied upon, the Examiner contends (1) such a comparison would be inherent because the comparison of heights is not a "mere possibility" as Applicants contend and (2) Applicants have interpreted MPEP § 2112 too narrowly and, thus, this section of the MPEP has been misapplied (see below). For example, the Examiner notes (1) a comparison of the directions must "necessarily" be made because the samples are "only" placed along the "top" of the elongated pillars (i.e., only in the "Y" direction) and "never" in the "wells" between the pillars or on top of the channel defining walls (i.e., along the "X" direction) as this would negate the purpose of making the pillar chip (i.e., what's the point of making pillars if you don't place your sample on them). Furthermore the top and bottom plates are "only" designed to "fit together" and, as a result, a comparison of the "X" and "Y" directions necessarily has to have occurred to obtain this result. Therefore, a

comparison of heights has "inherently" been made even under Applicants' strict interpretation of MPEP § 2112.

Furthermore, the Examiner notes (2) that while MPEP § 2112 does require that a certain result and/or characteristic must "necessarily" flow from the reference, the Courts do permit a "reasonable" amount of "speculation" to determine whether said result and/or characteristic would necessarily occur. For example, in *In re Best* (e.g., see *In re Best,* 195 USPQ 430 (CCPA 1977)) the Court upheld an anticipatory reference under the doctrine of inherency even though the claimed "cooling step" did NOT "necessarily flow" from the prior art reference (at least not in the sense that Applicants are interpreting MPEP § 2112). The claims in *Best* were drawn to a process for stabilizing zeolites from which sodium cations had been removed by ion exchange and further required a "cooling step" that was not expressly recited by the prior art. However, the Court held that this cooling step was inherently disclosed even though it did not "necessarily" flow from the prior art reference (e.g., the zeolites in the anticipatory reference could have been handled with gloves while they were hot, avoiding said cooling step). Thus, the Court permitted the Examiner to "speculate" as to the temperature at which the zeolites were handled (e.g., room temperature), which then permitted the Court to deduce that a cooling step "necessarily" occurred based on this speculation. In the present case, the Examiner contends that a reasonable basis for speculating that the claimed comparison of heights in Indermuhle et al. has occurred has been set forth in the 35 U.S.C. § 102 rejection above (for further support of this legal position see also *In re Graves* 36 USPQ2d 1697 (CAFC 1995) (prior art reference disclosing a system for testing the integrity of electrical interconnections that did not specifically disclose simultaneous monitoring of output points still anticipated claimed invention if simultaneous monitoring is

within the knowledge of a skilled artisan i.e., result did not "necessarily" flow from reference, but rather had to be combined with the "knowledge" of a skilled artisan); see also *In re Donohue*, 226 USPQ 619 (CAFC 1985) (prior art anticipates a claim if it discloses the claimed invention such that a skilled artisan could take its teachings and his own knowledge to possess the claimed invention)).

Accordingly, the 35 U.S.C. § 102 rejection cited above is hereby maintained.

New Rejections and/or Objections

Objections

5. Claim 4 is objected to because of the following informalities:

A. Claim 4 contains the two "(a)" steps in the claim. Appropriate correction is requested

6. Applicant is also advised that should claim 1 be found allowable, claim 27 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claims Rejections - 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 8, 9 and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al. (Liu, G.-Y.; Xu, S.; Qian, Y. "Nanofabrication of Self-Assembled Monolayers Using Scanning Probe Lithography" Acc. Chem. Res. 2000, 33, 457-566) (Published on Web **3/16/2000**).

For ***claims 1, 27***, Liu et al. (see entire document) disclose a scanning probe lithography (SPL)-based method for fabricating arrays of SAM including SAMS that are attached to proteins (see Liu et al., abstract; see also figures 1 and 10), which anticipates the claimed invention. For example, Liu et al. disclose comparing height uniformity of a first direction and a second direction across a substrate to identify a first detection havin higher height uniformity than a second direction, wherein said first and second directions are planar to the substrate (e.g., see Liu et al., page 458, paragraph 2, "First, the surface structure is characterized under very low force or load [i.e., the surface is scanned in the X and Y directions in the plane]. Fabrication locations are normally selected in regions with <u>flat</u> surface morphology, e.g., Au(111) plateau areas [i.e., directions "aligned" with and/or "connecting" the selected array of "flat" Au(111) plateaus represent the direction with higher height uniformity]"; see also figure 1 A and B showing the characterization process for AFM). In addition, Liu et al. disclose placing the different chemical moieties on the substrate so as to provide features thereon along rows more closely aligned with the first direction than the second direction, in order to fabricate an array of multiple features of different chemical moieties on a substrate surface (e.g., see figure 10 wherein the $HS(CH_2)_2COOH$ and LYZ (i.e., $HS(CH_2)_2COOH$ and LYZ represent "different

chemical moieties" from each other and from the surrounding $C_{10}S$ SAMs) are placed in the array of "flat" regions.

For ***claim 2***, Liu et al. disclose protein biopolymers (e.g., see figure 10).

For ***claim 3***, Liu et al. disclose using AMF to measure the "thickness" of the Au(111) plateau substrate (e.g., see page 458, column 1, middle paragraph).

For ***claim 8***, Liu et al. disclose a first direction comprising connecting the opposite corners of the square shown in figure 10 with another direction that is perpendicular to said first direction, but does not run through any of the squares.

For ***claim 9***, Liu et al. also disclose a first direction that is parallel with the rows (e.g., the direction that connects all the squares in a row).

For ***claim 45***, Liu et al. disclose placing the SAM/LZY in a "row of squares" (see figure 10) that is more closely aligned with the first direction (i.e., the line connecting the squares) than a second direction (e.g., any line that contains less squares or no squares but still resides on the planar surface).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-9, 32-38, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Liu, G.-Y.; Xu, S.; Qian, Y. "Nanofabrication of Self-Assembled Monolayers Using Scanning Probe Lithography" Acc. Chem. Res. 2000, 33, 457-566) (Published on Web **3/16/2000**) and Abbe et al. (U.S. Patent No. 4,860,229) (Date of Patent is **August 22, 1989**) and Cattell (U.S. Patent No. 6,180,351) (Date of Patent is **January 30, 2001**) and Applicants' admission in the specification.

For ***claims 1-3, 8, 9 and 45***, Liu et al. teach all the limitations stated in the 35 U.S.C. 102(b) rejection above (incorporated in its entirety herein by reference), which anticipates and, as a result, renders obvious claims 1-3, 8-9 and 45.

The prior art teaching of Liu et al. differ from the claimed invention as follows:

For ***claims 4, 32, 33, 34***, the prior art teachings of Liu et al. differ from the claimed invention by not expressly reciting the use of a "remote location" to receive the substrate.

For ***claim 5-7 and 35-38***, the prior art teachings of Liu et al. differ from the claimed invention by not reciting forwarding the identification to a remote location. Nor does the reference recite the storage of said identification into memory.

For ***claim 28***, the prior art teaching of Liu et al. differ from the claimed invention by not specifically reciting the use of a "pulse jet" printer.

However, Abbe et al. teach the following limitations that are deficient in Liu et al.:

For ***claim 4, 32, 33, 34 and 46***, Abbe et al. (see entire document) teach the use of a "remote" wafer flatness station (e.g., see abstract) fro processing the wafers before they are labeled with proteins and/or other different chemical moieties.

For ***claims 5-7 and 35-38***, Abbe et al. teach the use of a remote computer to store the identifying features that characterize the flatness of each chip (e.g., see abstract, Summary of Invention and Figures)

For ***claim 28***, Cattell (see entire document) teaches "pulse jet" printers (e.g., see Cattell, column 8, last paragraph).

For ***claims 37-38***, Cattell teaches the use of electronic media and computer memory in association with identifiers on the substrate and also the use of remote locations (e.g., see Cattell, Summary of Invention).

It would have been obvious to one skilled in the art at the time the invention was made to use scanning probe lithography techniques as taught by Liu et al. with chips produced using the wafer flatness station as taught by Abbe et al. because Liu et al. explicitly teaches that flat chips are desirable (e.g., see Liu et al, page 458, middle paragraph) and Abbe et al. provides a method for producing flat chips (e.g., see Abbe et al., abstract). Furthermore, one of ordinary skill in the art would have been motivated to use the remote flat chip station as taught by Abbe et al. because Abe et al. teaches that

their method can be automated for high throughput screening (see Liu et al., Summary of Invention), which would solve at least one problem faced by Abe et al. in their use of SPL (e.g., see Abe et al., Conclusion, "A well-known limitation of all SPL procedures is that the fabrication steps are serial instead of parallel in nature, which results in a relatively low fabrication speed. Therefore, at present, SPL is used as a research tool in laboratories instead of as a manufacturing tool for high throughput applications. Therefore, at present, SPL is used as a research tool in laboratories instead of as a manufacturing tool for high throughput applications." Finally, one of ordinary skill in the art would have reasonably expected to be successful because Liu et al. teach that "... SPM has also been used to manipulate atoms on ... semiconductor surfaces" (e.g., see Liu et al., page 457, column 2, paragraph 2), which would encompass the semiconductor chips disclosed by Abbe et al. (e.g., see Abbe et al., Field of Invention). Furthermore, Abbe et al. state that their invention is broadly applicable to chips that are used in other areas beside the semiconductor industry (e.g., see Abbe et al., column 2, paragraph 1, "The flatness module of the present invention can advantageously be employed to obtain selected flatness profiles for samples other than semiconductor wafers ... without departing from the inventive concept").

It would have been obvious to one skilled in the art at the time the invention was made to use the pulse jet printers and/or computer/electronic media as taught by Cattell with the scanning probe lithography as taught by Liu et al. because both references teach the use of addressable arrays including arrays of biopolymers (i.e., the references represent analogous art). Furthermore, one of ordinary skill in the art would have been

motivated to use the pulse-jet printers because according to Applicants' admission in the specification this means of deposition has the advantage of non-contact deposition (e.g., see specification, page 2, middle paragraph, "Typical procedures known in the art for deposition [include] ... a pulse jet, such as an inkjet head ... Such a technique has been described, for example, in U.S. Pat. No. 6,180,351, PCT publications WO 95/25116 and WO 98/41531, and elsewhere. This method has the advantage of non-contact deposition"). Furthermore, one of ordinary skill in the art would have reasonably expected to be successful because both references teach the use of biopolymer arrays on a chip.

10. Claims 1-9, 27, 28, 30, 32-34, 36-38 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Indermuhle et al. (US Patent Application Publication 2001/0036674 A1) (Filed on **February 23, 2001**) and Cattell (U.S. Patent No. 6,180,351) (Date of Patent is **January 30, 2001**) and Applicants' admission in the specification.

For ***claims 1-9, 27, 30 and 32-34, 36 and 46***, Indermuhle et al. teach all the limitations stated in the 35 U.S.C. 102(e) rejection above (incorporated in its entirety herein by reference), which anticipates and, consequently, also renders obvious claims 1-9, 27, 30, 32-34, 36 and 46.

The prior art teaching of Indermuhle et al. differs from the claimed invention as follows:

For ***claim 28***, the prior art teaching of Indermuhle et al. differ from the claimed invention by not specifically reciting the use of a "pulse jet" printer. Indermuhle et al.

only disclose "inkjet" printers (e.g., see page 12, paragraph 128), but does not mention "pulse jet" even though "inkjet" printers commonly contain "pulse jets."

For ***claims 37-38***, the prior art teaching of Indermuhle et al. differ from the claimed invention by not specifically reciting the use of a computer and/or electronic media in association with the identification.

However, Cattell teaches the following limitations that are deficient in Indermuhle et al.:

For ***claim 28***, Cattell (see entire document) teaches "pulse jet" printers (e.g., see Cattell, column 8, last paragraph).

For ***claims 37-38***, Cattell teaches the use of electronic media and computer memory in association with identifiers on the substrate and also the use of remote locations (e.g., see Cattell, Summary of Invention).

It would have been obvious to one skilled in the art at the time the invention was made to use the pulse jet printers and/or computer/electronic media as taught by Cattell with the pillar chips as taught by Indermuhle et al. because both references teach the use of addressable arrays including arrays of biopolymers, such as DNA, on a substrate (i.e., the references represent analogous art). Furthermore, one of ordinary skill in the art would have been motivated to use the pulse-jet printers because according to Applicants' admission in the specification this means of deposition has the advantage of non-contact deposition (e.g., see specification, page 2, middle paragraph, "Typical procedures known in the art for deposition [include] ... a pulse jet, such as an inkjet head ... Such a technique has been described, for example, in U.S. Pat. No. 6,180,351, PCT publications WO

95/25116 and WO 98/41531, and elsewhere. This method has the advantage of non-contact deposition"). In addition, one of ordinary skill in the art would have been motivated to use the pulse jet printers and/or computer/electronic media because Indermuhle explicitly states that these features allow large amounts of data generated by the arrays to be shared with others (e.g., see Indermuhle et al., page 1, paragraph 5, "Furthermore, it would be desirable if later discovered biological function data associated with one or more features of an array could similarly be provided to many end users. The present invention further realizes that when many arrays with the same set of features are provided to many different end users, there is the opportunity for them to discover feature errors or biological function data associated with features which could be advantageously shared with others"). Furthermore, one of ordinary skill in the art would have reasonably expected to be successful because both references teach the use of biopolymer arrays on a chip.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon D Epperson whose telephone number is (571) 272-0808. The examiner can normally be reached Monday-Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jon D. Epperson, Ph.D.
February 1, 2005